

[illegible]

[055] According to the present invention, a redox-active moiety is covalently bound to a nucleic acid oligomer by the reaction of the nucleic acid oligomer with the redox-active moiety or portions thereof (see also the section "Detailed Description of the Invention"). This bond can be achieved in four different ways:

[072] Binding the nucleic acid oligomer to the conductive surface may take place before or after the redox-active moiety is attached to the nucleic acid oligomer. In the case of a redox-active protein/enzyme comprising apoprotein and cofactor(s), instead of the complete redox-active moiety, it is also possible for only the apoprotein, the apoprotein and a portion of the cofactors, or one or more of the cofactors to be attached and the redox-active moiety will be completed by subsequent reconstitution with the remaining missing portions. If a linked (at least bimolecular) electron-donor/electron-acceptor complex is used as the redox-active moiety, the electron acceptor (or donor) may, as described under b) or c) in the section "Binding a Redox-Active Moiety to a Nucleic Acid Oligomer," be attached to a terminal base, or in place of a terminal base, to the nucleic acid oligomer, and the electron donor (or acceptor) may be attached by subsequent covalent attachment to a reactive group of the electron acceptor (or donor) or, as described under a) in the section "Binding a Redox-Active Moiety to a Nucleic Acid Oligomer," by subsequent attachment to a terminal reactive group of the nucleic acid oligomer backbone at the same end (see also the section "Detailed Description of the Invention"). Alternatively, binding the nucleic acid oligomer to the conductive surface may take place before or after the spacer having a reactive group for binding the redox-active moiety is attached. Binding the already modified nucleic acid oligomer to the conductive surface, i.e. binding to the surface after the redox-active moiety is attached to the nucleic acid oligomer or after portions of the redox-active moiety are attached, or after the spacer having a reactive group for binding the redox-active moiety is attached, likewise takes place as described under a) to c) in this section.

[077] Regarding the individual steps in "Binding a Redox-Active Moiety to a Nucleic Acid Oligomer," as well as in "Binding an Oligonucleotide to the Conductive Surface," it should be noted that, in the section "Detailed Description of the Invention," the various combination possibilities of the individual steps that lead to the same end result are demonstrated in an example (Figure 2).



